

⑪実用新案公報(Y2)

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⑮考案の名称 多連スロットルボディ

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⑮実用新案登録請求の範囲

並設された2個の吸気バレルと、前記両吸気バレルのスロットル弁を軸支するべくスロットルボディ本体に回動自在に支持された共通の弁軸とを備える多連スロットルボディであつて、

前記スロットルボディ本体の前記両吸気バレル間の隔壁部分に、前記弁軸を気密に貫通させる軸受孔と前記軸受孔を横切る方向に開設された溝とが設けられ、かつ前記弁軸を支持する球軸受を保持するスペーサ部材が前記溝内に圧入されていることを特徴とする多連スロットルボディ。

<考案の詳細な説明>

<産業上の利用分野>

本考案は内燃機関用スロットルボディに関し、特に複数の吸気バルブと各吸気バレルのスロットル弁を軸支する共通の弁軸とを有する多連スロットルボディに関する。

<従来の技術>

従来高出力、大排気量のエンジンには、大流量の空気を吸入するために複数の吸気バレルを並設した多連スロットルボディが使用されている。多連スロットルボディは、各吸気バレルのスロットル弁を運動させるべく1本の共通の弁軸で支持する場合に、弁軸をその両端及び吸気バレル間の隔壁部分に於て支持することになる。スロットル弁の弁軸は、実開昭60-175879号公報に開示される

ように球軸受で支持すると、吸入負圧によるスロットルボディ本体との間の摩擦力が低減されて円滑に回動できるので好ましい。

球軸受は、構造上気密性等の点から通常弁軸の軸線方向に沿つてスロットルボディ本体に外側から装着されるので、多連スロットルボディでは、弁軸が両端を球軸受で、中央部を吸気バレル間の隔壁部分に設けられた軸受孔で直接支持する構造となる。ところが、この隔壁部分には、吸入負圧によって両端よりもラジアル方向の荷重が集中するため、弁軸と軸受孔との間に生じる摩擦力でスロットル弁の円滑な作動が妨げられると云う問題があつた。

<考案が解決しようとする問題点>

そこで、本考案の目的は、ラジアル方向の荷重を受ける球軸受を吸気バレル間の隔壁部分に装着して弁軸を支持することにより、吸入負圧によりスロットルボディ本体との間に生じる摩擦力を低減してスロットル弁の作動をより円滑にし得る多連スロットルボディを提供することにある。

<問題点を解決するための手段>

上述の目的は、本考案によれば、並設された2個の吸気バレルと、前記両吸気バレルのスロットル弁を軸支するべくスロットルボディ本体に回動自在に支持された共通の弁軸とを備える多連スロットルボディであつて、前記スロットルボディ本

English Translation of

UTILITY MODEL PUBLICATION OF JAPAN

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Title: MULTIPLE CONNECTION TYPE THROTTLE BODY
Application Number: S62-193870
Date of filing: 21.12.1987
Inventor: Toshiharu UJO, Kiyohiko OKAJIMA, Mitsumasa IIDA
Applicant: HONDA MOTOR CO LTD

[Utility model registration claim:]

[Claim 1]

A multiple connection type throttle body comprising:

two aspiration barrels which were adjacently provided;

The common valve stem which a swing was free, and was supported by the main body of throttle body in order to support a throttle valve of the both aspiration barrel in an axis; characterized by

the bearing bore which makes it is airtight, and said valve stem penetrate and the ditch which was established by a course to cross said bearing bore being installed in a partition part between things of said both aspiration barrel of the main body of said throttle body, and spacer member holding a ball bearing supporting the valve stem being press-fitted in the ditch.

[Detailed explanation of the device]

[Industrial applicability]

The present invention relates to a throttle body for internal combustion engines, and particularly to a multiple connection type throttle body comprising a valve stem of joint ownership to support a throttle valve of plural aspiration barrels.

[Prior art:]

A multiple connection type throttle body which adjacently provided an aspiration barrel of a plural number to inhale aspiration of large flow quantity to the high output, an engine of large displacement volume conventionally is employed. When a multiple connection type throttle body should interlock with a throttle valve of each aspiration barrel, and it is supported with one common valve stem, it is to support a valve stem in the both ends and a partition part between aspiration barrels. When a valve stem of a throttle valve supports with a ball bearing so that, by the way, Japanese Utility Model Laid-Open No. 60-175879 bulletin has disclosure, frictional force between things of the throttle body main body by inhalation underpressure is reduced, and it can be pivoted smoothly.

As for the ball bearing, it is with the structure that a valve stem supports both ends in a bearing bore established central part on a partition part between aspiration barrels with a ball bearing in a multiple connection type throttle body in what is loaded from the outside in consonance with a spindle line direction of a normal valve stem by the throttle body main body directly from a point of structure flush dense sex. However, on this partition part, there was a problem that the smooth operation of a throttle valve was disturbed in frictional force to occur between a valve stem and bearing bores so that weighting of a radial direction centered from both ends by inhalation underpressure.

[The problem that an invention is going to solve]

Thus it is to provide a multiple connection type throttle body which frictional force to produce between the throttle body main bodies by inhalation underpressure by an object of the present invention loads a ball bearing catching load of a radial direction on a partition part between aspiration barrels, and supporting a valve stem is reduced, and do the operation of a throttle valve more smoothly.

[Means to solve a problem]

The object is achieved by offering following a multiple connection type throttle body.

A multiple connection type throttle body comprising:

two aspiration barrels which were adjacently provided;

The common valve stem which a swing was free, and was supported by the main body of throttle body in order to support a throttle valve of the both aspiration barrel in an axis; characterized by

the bearing bore which makes it is airtight, and said valve stem penetrate and the ditch which was established by a course to cross said bearing bore being installed in

a partition part between things of said both aspiration barrel of the main body of said throttle body, and spacer member holding a ball bearing supporting the valve stem being press-fitted in the ditch.

[Operation]

Spacer member to hold a ball bearing in a ditch installed in a partition part of the main body of throttle body is press-fitted. By this, airtightness is got in the partition part, and a valve stem can be supported with a ball bearing.

[Example]

An example of the present invention particular will now be described the details with reference to a  attached drawing.

In figure 1, a multiple connection type throttle body which the present invention was applied to is shown. This multiple connection type throttle body is two pairs that adjacently provided two aspiration barrels 2,3 of the same shape to main body of throttle body 1, and it is provided each inside a top and bottom direction aspiration road 4,5. Throttle valve 6,7 of butterfly type to open and close each aspiration road 4,5 to throttle body 1 enable a roundabout way to common valve stem 8, and it is supported. Main body of throttle body 1 is penetrated through in a perpendicular direction, and a swing is free, and, as for valve stem 8, it is supported aspiration road 4,5 in the ends 9,10 and central part 11. It penetrates, and, in one end 9 of valve stem 8, it is supported bearing bore 13 of hub member 12 projected in one side of main body of throttle body 1 by means of bearing 14 by substantial airtightness. Seal form A deep ditch ball bearing catching weighting of a radial direction to bearing 14 in the embodiment is employed. It is adhered and sealant 15 and sleeve 16 is mounted the outside of bearing 14 with and and throttle lever 17 falls out with nut 18, and it is left on an edge outside end 9, and it is done. Throttle lever 17 is biased by the course that a valve of regular throttle valve 6,7 is closed by means of return spring 19.

Other end 10 of valve stem 8 is put in substantial airtightness in bearing bore 21 of another hub member 20 projected in hub member 12 of main body of throttle body 1 and the other side, and it is supported by means of throttle body main body 1 directly. Coupling lever 22 falls out with nut 23, and it is left on the tip of end 10, and it is done, and on earth it is adhered with valve stem 8 pivotably. Throttle sensor 24 is fixed to the outside of hub member 20, and the arm 25 engages with coupling lever 22. Coupling lever 22 is biased by the course that a valve of regular throttle valve 6,7 closes along with arm 25 by means of return spring 26 same as throttle lever 17. Central part 11 of valve stem 8 penetrates through bearing bore 28,29 of central partition part 27 of main body of throttle body 1 for substantial airtightness, and it is supported by means of bearing 30. Bearing 30 makes yen bore 32 generally engage outer ring 30a to rectangular spacer member 31 of the width, and, as shown in figure 3, it is fixed unitedly. On the other hand, as shown in figure

2, 33, deep ditch 33 of the width generally makes form with spacer member 31 from bottom end face 1a to central partition part 27 of main body of throttle body 1. It press-fits, and bearing 30 is fixed with spacer member 31 in deep ditch 33 unitedly. As thus described, by means of main body of throttle body 1 leaving a partition part of some wall thickness on either side of bearing 30, airtightness in central part 11 is got, and aspiration breaking through is prevented. In accordance with exemplary embodiments, same as bearing 14 of end 9, a seal catching load of a radial direction to bearing 30-shaped bearing is employed.

Valve stem 8 mounts main body of throttle body 1 with the following points. At first spacer member 31 holding bearing 30 unitedly is press-fitted from aperture 30a of end face 1a in ditch 33, and it makes bearing bore 28 match conservative estimate 27b, and it is fixed. End 10 is done first, and valve stem 8 is interposed from bearing bore 13 of hub member 12 next. It makes private 30b of bearing 30 engage and end 10 is fitted in bearing bore 21 and central part 11. As for valve stem 8, a part penetrating through aspiration barrel 3 is increased the diameter of with stepped portion 34,35, and it makes this stepped portion 34 abut with an end face of private 30b. In end 9 of valve stem 8, bearing 14 makes the private 14a abut with stepped portion 35, and it is engaged, and it press-fits in hub member 12 with the insertion of valve stem 8, and it is fixed. The outside of bearing 14 is mounted with sleeve 16, sealant 15, return spring 19, throttle lever the 17th class, and nut 18 is engaged threadedly to an edge outside valve stem 8. In a like manner, coupling lever 22, return spring the 26th class are put on in hub member 20 in end 10 of the other side, and nut 23 is engaged threadedly. Private 30b of and sleeve 16 is gone through by means of tightening both nuts 18, 23, and private 14a of bearing 14 is pushed to stepped portion 35 and bearing 30 is pushed to stepped portion 34.

In addition, in the example, a ditch of central partition region press-fitting a bearing was established in the lower part side of the throttle body main body, and, however, a side of the throttle body main body can establish this ditch. Furthermore, both aspiration barrel is not limited to the same shape, and it may be a different person of a diameter. In addition, present invention 1 can be applied to a throttle body and a vaporizer of a boa type, and it is put in other, technical scope of the present invention, and, in addition, the example can carry out various changes.

[Effect of an invention]

According to the present invention, a ditch is established in a central partition part of the main body of throttle body, and spacer member holding a bearing in this ditch is press-fitted. While it cuts to support by means of a bearing by this, and finding airtightness in center partition region with a valve stem. Because of this frictional force to occur between the main bodies of throttle body by inhalation underpressure can be reduced. And operability, reliability can be improved

[Brief description of drawings]

[Figure 1] is a longitudinal sectional view showing a throttle body.
[Figure 2] is a bottom plan view of a throttle body shown to figure 1.
[Figure 3] is front view showing a bearing loaded by spacer member.

1 · main body of throttle body

2, 3 · aspiration barrel

6, 7 · throttle valve

8 · valve stem

27 · central partition part

28, 29 · bearing bore

30 · bearing

31 · spacer member

33 · ditch

FIG. 1

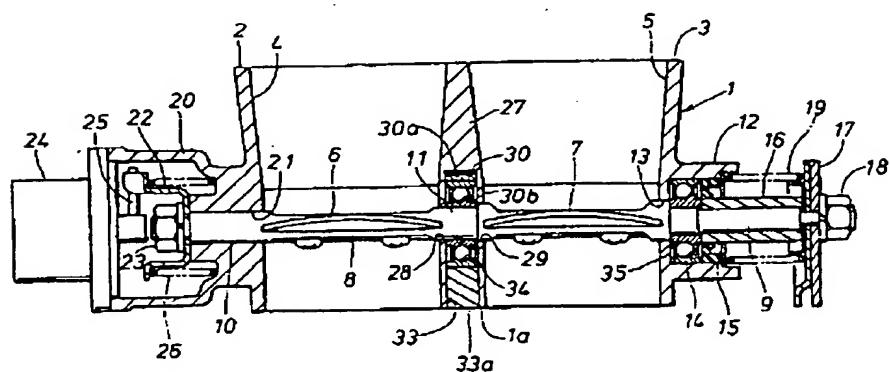


FIG. 2

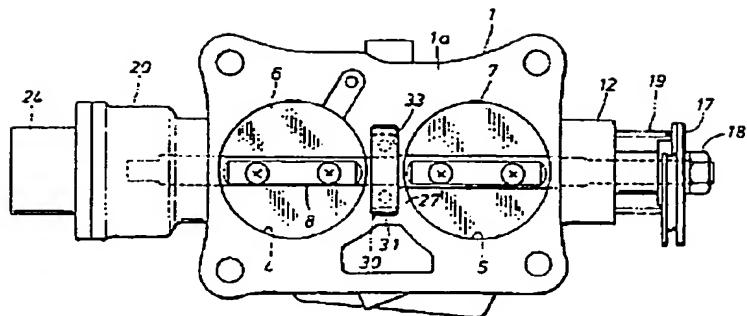


FIG. 3

